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International evidence on unemployment compensation prevalence and costs

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Introduction[1]

Each year unemployment compensation (UC) programmes pay benefits to millions of unemployed workers in about 70 countries. The primary objective of UC programmes is to provide timely and adequate income support to eligible unemployed workers. UC benefits are paid for limited periods with the payments replacing part of the loss of earnings caused by unemployment. Statutory and administrative aspects of UC vary widely from one country to the next.

This paper was written to provide a descriptive overview of two aspects of UC programmes. It utilizes a cross-country perspective to examine the prevalence of UC and UC costs. The analysis of UC prevalence is quantitative and historical with information extending back to 1949. It emphasizes income (per-capita of the gross domestic product (GDP)) and geographic location as correlates (predictors) for the countries that have UC programmes. Both are strongly linked to the presence of UC in individual countries.

The analysis of UC costs covers a shorter period (the 1990s), and is limited to 32 countries where cost data have been assembled. The cost analysis identifies three factors related to costs: the unemployment rate, the recipiency rate and the replacement rate (the size of periodic benefits relative to average earnings). All three are linked to UC costs as illustrated in quantitative data from the 1990s. UC costs are also shown to be related to regional location and the type of UC statute operative in individual countries.

1. Countries with unemployment compensation

The number of countries with UC programmes in 2004 was more than three times the number with UC at the end of the Second World War. To help place this increased prevalence into a historical context, Table 1 presents counts of countries with UC spanning the period from 1949 to 2004. The data are arranged by geographic area and by ten-year intervals to 1989 and by five-year intervals since 1989. Over this period, countries with UC increased from 22 in 1949 to 68 in 2004.

To discuss growth in the prevalence of UC from a global perspective, a data file was assembled where each included country had a population of one million or more persons in 1999. The one million population threshold excludes a number of small countries. For example, the 2001 edition of the International Monetary Fund (IMF) publication *International Financial Statistics (IFS) Yearbook* displays economic data for 32 countries with

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[1] Comments and conclusions made in the paper are the author's and are not necessarily shared by the Urban Institute or the International Social Security Association (ISSA).

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populations of less than one million, but their combined population in 1999 was only 9.9 million. Other countries with small populations are not included in the IFS Yearbook, e.g., the Caribbean islands of Guadeloupe and Martinique.[2] The 150 "large" countries had a total population of 5.9 billion persons in 1999, accounting for nearly all (99 per cent) of the world's population.

Table 1 provides a geographic breakdown of the 150 countries into eight major regions. Some comments about the regional classifications may be helpful. The first grouping, "OECD-20" countries, includes 14 member countries of the Organization for Economic Cooperation and Development (OECD) from continental Europe plus six where English is the primary language (Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States). Eight other OECD member countries have been classified according to geographic area while two (Iceland and Luxembourg) were excluded due to their small populations. Thus Japan and the Republic of Korea are placed in East and South Asia; the Czech Republic, Hungary, Poland and Slovakia in Central and Eastern Europe; Turkey in North Africa and the Middle East and Mexico in Central America and the Caribbean. The Czech Republic, Hungary, Poland, Turkey and Mexico are middle income countries with per-capita GDP measurably lower than for the countries in the "OECD-20" group. Placing Japan and the Republic of Korea in East and South Asia also yields a larger sample of high income countries from this geographic area. Clearly other classifications are possible.

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[2] Some "small" countries have UC programmes, e.g., Barbados, but the number has not been determined. Three countries with larger populations were also excluded from the sample. North Korea and Cuba, with populations of 23 million and 11 million respectively in 1999, were not included because their socialist ideology does not recognize the existence of unemployment. The commonwealth of Puerto Rico with a population of 4 million was excluded because its citizens are covered by the unemployment insurance (UI) system of the United States.

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Table 1. *Number of independent countries and number of UI programmes by major geographic areas, 1949-2004*

	1949	1959	1969	1979	1989	1994	1999	2004	1949-2004 Changes
Panel A. Number of independent countries, population of 1.0 million in 1999									
OECD-20 countries	20	20	20	20	20	20	20	20	0
Central Eastern Europe	8	8	8	8	8	12	12	12	4
Former Soviet Union	1	1	1	1	1	16	16	16	15
East-South Asia	15	19	20	22	22	22	22	22	7
North Africa-Middle East	11	14	16	17	17	17	17	17	6
Sub-Saharan Africa	3	10	36	39	40	42	42	42	39
South America	10	10	10	10	10	10	10	10	0
Cent. America-Caribbean	10	10	11	11	11	11	11	11	1
Total	**78**	**92**	**122**	**128**	**129**	**150**	**150**	**150**	**72**
10 and 5 year changes		14	30	6	1	21	0	0	
Panel B. Countries with unemployment compensation programmes									
OECD-20 countries	19	19	19	20	20	20	20	20	1
Central Eastern Europe	0	1	1	2	3	12	12	12	12
Former Soviet Union	0	0	0	0	0	14	14	14	14
East-South Asia	1	1	1	3	4	4	6	7	6
North Africa-Middle East	0	0	1	3	5	6	6	7	7
Sub-Saharan Africa	1	1	1	2	2	2	2	2	1
South America	1	3	4	4	4	6	6	6	5
Cent. America-Caribbean	0	0	0	0	0	0	0	0	0
Total	**22**	**25**	**27**	**34**	**38**	**64**	**66**	**68**	**46**
10 and 5 year changes		3	2	7	4	26	2	2	
Panel C. Proportion of countries with unemployment compensation programmes									
OECD-20 countries	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.05
Central Eastern Europe	0.00	0.13	0.13	0.25	0.38	1.00	1.00	1.00	1.00
Former Soviet Union	0.00	0.00	0.00	0.00	0.00	0.88	0.88	0.88	0.88
East-South Asia	0.07	0.05	0.05	0.14	0.18	0.18	0.27	0.32	0.25
North Africa-Middle East	0.00	0.00	0.06	0.18	0.29	0.35	0.35	0.41	0.41
Sub-Saharan Africa	*	0.10	0.03	0.05	0.05	0.05	0.05	0.05	-0.05
South America	0.10	0.30	0.40	0.40	0.40	0.60	0.60	0.60	0.50
Cent. America-Caribbean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.28**	**0.27**	**0.22**	**0.27**	**0.29**	**0.43**	**0.44**	**0.45**	**0.17**
10 and 5 year changes		-0.01	-0.05	0.04	0.03	0.13	0.01	0.01	

Source: Data on UI programmes from Social Security Programs Throughout the World, various issues.
Note: * Not shown as there were only three independent countries in 1949.

The breakup of the geographic block dominated by the former Soviet Union (FSU) and the breakup of the former Yugoslavia have yielded 28 successor states. The table shows two groupings that distinguish the countries of Central and Eastern Europe (CEE) from those located within the borders of the former Soviet Union. Thus the three Baltic Republics (Estonia, Latvia and Lithuania) are included within the 16 countries of the Former Soviet Union even though they are physically located in Eastern Europe. Note how the counts of

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countries in these two regions increase between 1989 and 1994.[3] Again, alternative classifications could be made.

Sub-Saharan Africa has the largest number of independent countries, with 42 in recent years. All other regions in Table 1 have between 10 and 22 countries. However, population data demonstrate the demographic predominance of East and South Asia. The combined populations of these 22 countries totaled 3.3 billion in 1999, or 55.7 per cent of the worldwide total. China and India account for roughly 40 per cent of the world's population. Six of the ten most populous of the 150 countries are from this region, and the average for the 22 countries was over 150 million in 1999. The preponderance of the world's population resides in East and South Asia.

In Panel A of Table 1, note the increase in the number of independent countries between 1949 and 2004, from 78 to 150 or nearly doubling. The increases were concentrated most heavily in two periods, between 1949 and 1969 and between 1989 and 1994. The increase of 44 countries during 1949-1969 reflects the dissolution of former colonial empires, most apparent in Sub-Saharan Africa, but also in East and South Asia and in North Africa and the Middle East. All but one of the 44 newly independent countries were from these three regions. The increase between 1989 and 1994 reflects developments in the CEE and FSU regions already noted.

The counts of countries with UC programmes in Panel B indicate a slow pace of adopting UC in all sub-periods except 1989-1994. Of the 46 adoptions of UC between 1949 and 2004, 26 occurred during 1989-1994. Furthermore, 23 of the 26 adoptions during these five years were by countries in the CEE and FSU regions.[4]

Panel C displays proportions of countries with UC by region and year. Before the 1990s, the worldwide proportion ranged between 0.22 and 0.29. Note the decline in the proportion between 1959 and 1969 from 0.27 to 0.22 as 30 newly independent countries were established but only two (Brazil and Iraq) adopted UC programmes. Prior to 1989-1994, the fastest pace of adopting UC was during the 1970s when seven countries did so. After 1994, a slow pace of adoptions has resumed with a net gain two programmes during 1994-1999 and two during 1999-2004.[5]

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[3] For the CEE grouping, the increase from 8 to 12 reflects three developments: the disappearance of the former East Germany through German reunification, the breakup of the former Czechoslovakia into two republics and the breakup of Yugoslavia into five successor states.

[4] Counts of countries with UC programmes are based mainly on *Social Security Programs Throughout the World* (SSPTW). Of the OECD-20 countries, 17 of the 19 with UC in 1949 (all but Australia and Greece) established their programmes before 1940 and 14 had programmes even before 1930 and the great depression.

[5] The seven new adoptions during the 1970s were in Bangladesh, Ghana, Hong Kong, Hungary, Israel, the Libyan Arab Jamahiriya and Portugal. The new adoptions after 1994 were in the Republic of Korea (1996), Taiwan (1999), Turkey (2002) and Thailand (2004) (dates reflect the first year of benefit payments). Mongolia adopted UC in 1995 but Kazakhstan

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The slow pace of adopting UC programmes to some extent reflects the low income of countries that became independent after 1949. In 1999, for example, worldwide mean per-capita GDP (income) in the data file was USD6,870 and the median across the 150 countries was USD3,935, i.e., 75 countries had income below USD3,935. Of the 72 countries that became independent between 1949 and 2004, 52 had per-capita GDP of less than USD3,935 in 1999, and only ten had income above USD6,870. Low average income was even more characteristic in the 44 countries that became independent between 1950 and 1969, with 35 of the 44 having income in 1999 below USD3,935. Later analysis will emphasize the importance of a country's income level in determining the likelihood of having a UC programme in 2004 and of adopting UC between 1949 and 2004. The generally slow pace of adoptions (except during 1989-1994) is partly due to the generally low income levels of the countries that became independent after 1949.

The presence of UC also varies widely by region. Note how 19 of the OECD-20 countries already had UC in 1949. These countries, in fact, accounted for 19 of the 22 countries with UC in that year. The final adoption within the OECD-20 group was by Portugal in the mid 1970s, raising the Panel B count to 20 and the Panel C proportion from 0.95 to 1.00. The two other regions where most countries have UC are the CEE and FSU regions. Of the 28 countries from these two regions, only Kazakhstan and Tajikistan did not have a UC programme in 2004. Over half of the adoptions by CEE and FSU countries came by the end of 1992, or very shortly after independence. In nearly all instances, important institutional supports for UC were already in place, e.g., a national system of local employment offices and an established apparatus for collecting the payroll taxes that typically support UC programmes. Unemployment was anticipated as these countries evolved from command economies to market economies. UC programmes were established to provide social insurance against the newly acknowledged social contingency of unemployment and to help support the economic transition.

At the opposite extreme from OECD-20, CEE and FSU countries, Table 1 vividly illustrates that UC programmes remain rare in Sub-Saharan Africa and in Central America and the Caribbean. In three other regions (East and South Asia, North Africa and the Middle East, and South America) noticeable increases in UC prevalence have taken place since 1949, but only in South America did more than half the countries have UC in 2004. Worldwide, fewer than half of the 150 countries had UC programmes in 2004.[6]

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discontinued UC in 1996 leaving the FSU total stable at 14. The dating of Bangladesh raises a question since SSPTW gives a date of 1965 but the country only became independent in 1971.

[6] Reducing the population threshold from 1.0 million to 0.2 million would add 19 countries to the data file. Of these, five have UC in 2004: Barbados, Cyprus, Iceland, Luxembourg and Malta.

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2. The decision to adopt unemployment compensation

Table 1 vividly illustrates the regional differences in the prevalence of UC programmes. This section undertakes a quantitative analysis of the presence of UC in individual countries. The analysis emphasizes two factors: regional contrasts and differing prevalence among countries at different stages of economic development.

The indicator of economic development used here is per-capita GDP in 1999, measured on a purchasing power parity (PPP) basis.[7] This income measure varies widely across countries and regions. The worldwide average in 1999 was USD6,870.[8] The highest average for the eight regions was USD26,142 among OECD-20 countries while the average for Sub-Saharan Africa was USD1,458. The other six regional averages ranged between USD4,060 (East and South Asia) and USD7,718 (CEE countries).

Table 2 displays six regressions, each explaining a zero-one dummy variable where 1 indicates the presence of a UC programme in 2004. All six regressions show that per-capita GDP is strongly and positively associated with the likelihood of a country having UC. Regression (1) indicates that at an income level equal to the worldwide average of USD6,870 the probability of having UC is 0.45. However, at an income level twice the worldwide average (USD13,750) the probability is 0.70 compared to only 0.33 at an income level half of the worldwide average.

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[7] Estimates of per-capita GDP were taken from World Development Indicators 2001.

[8] Regional averages were computed using each country's population to weight its per-capita GDP.

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Table 2. *Presence of unemployment compensation in 2004 and adoption of UC 1949-2004*

	Presence of UC in 2004 (1)	Presence of UC in 2004 (1)	Adopted UC in 1949-2004 (3)	Adopted UC in 1949-2004 (4)	Adopted UC in 1949-2004 (a) (5)	Adopted UC in 1949-2004 (a) (6)
Constant	0.207 (4.4)	0.049 (1.1)	0.186 (3.3)	0.044 (0.9)	0.05 (1.0)	0.035 (0.7)
Relative per-capita Real GDP (b)	0.247 (7.8)	0.270 (11.0)	0.270 (4.4)	0.211 (4.6)	0.246 (4.6)	0.230 (4.4)
Dummy, CEE-FSU (c)		0.672 (9.4)		0.722 (9.3)		
Dummy, East and South Asia (c)		0.023 (0.3)		0.075 (0.9)		0.070 (0.8)
Dummy, South America (c)		0.324 (3.0)		0.341 (2.8)		0.336 (2.7)
Dummy, Central America and Carribean (c)		-0.223 (2.1)		-0.180 (1.6)		-0.183 (1.6)
Adjusted R2	0.286	0.586	0.128	0.518	0.171	0.236
Standard error	0.422	0.321	0.45	0.334	0.366	0.351
Mean dependant variable	0.453	0.453	0.359	0.359	0.200	0.200
Countries with UC	68	68	46	46	20	20
Number of countries	150	150	128	128	100	100

Source: Analysis of 150 countries with populations of 1 million or more in 1999.
Beneath each regression coefficient is the absolute value of its t ratio.
(a) Excludes countries from the CEE and FSU regions.
(b) Per-capita GDP in 1999 divided by the worldwide average of USD6,870.
(c) Dummy equals one for countries from the region, zero otherwise.

Note that equation (1) explains less than 30 per cent of the variation in the presence of UC in 2004.[9] Equation (2) adds regional dummy variables. Compared to equation (1), it explains nearly twice the fraction of variation in the presence of UC. Of the four dummy variables, those for the combined CEE and FSU regions and for South America both enter with positive

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[9] The adjusted R², the standard measure of goodness-of-fit, in equation (1) is only 0.286.

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coefficients that are statistically significant. In contrast, the dummy for Central America and the Caribbean enters with a negative coefficient that also is significant while the dummy for East and South Asia has a small and insignificant coefficient.[10]

Of the four regional dummies, the coefficient for the CEE-FSU region is by far the largest, and it exhibits the highest level of statistical significance. UC is much more prevalent in the CEE-FSU countries than would be expected given their levels of income. Controlling for income, the probability of UC in these countries is about 67 per cent higher (coefficient of 0.672) than would otherwise be expected. In contrast, the other dummy variable coefficients are much smaller.

In equation (2), two factors are seen to be significantly associated with the presence of UC in individual countries: income as proxied by per-capita GDP and location in specific regions. Combined, these two factors explain nearly 60 per cent of the variation in the presence of UC for 150 countries with populations one million or more.

From a worldwide perspective, the CEE-FSU countries are unusual among countries with middling levels of income for the nearly universal presence of UC programmes. Given their historical experience which includes a longstanding emphasis on social insurance protections, the widespread presence of UC programmes in these countries probably should not be surprising.

Equations (3)-(6) in Table 2 explore country decisions to adopt UC over the 1949-2004 period. Recall from Table 1 that 22 of the 150 countries already had a UC programme in 1949. These 22 were removed from the sample leaving 128 countries, 46 that adopted UC between 1949 and 2004 and 82 that still did not have UC in 2004. Equations (3) and (4) show that income (per-capita GDP) and the CEE-FSU dummy are the most significant factors in country decisions to adopt UC. Again, both enter the regressions with positive effects. As before, the dummy variables for South America and for Central America and the Caribbean respectively enter positively and negatively but with somewhat lower levels of significance in equation (4) compared to (2). Note also that the dummy variable for East and South Asia continues to have a small and insignificant coefficient in equation (4). Overall, equations (4) and (2) display very similar results.

Since adoption of UC between 1989 and 1994 by the CEE-FSU countries was almost universal, the pattern and/or determinants of adoptions might be different for countries in other regions. Equations (5) and (6) explore this issue in data where the 28 CEE-FSU countries were removed leaving 100 countries from other regions that did not have UC in

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[10] Statistical significance is indicated by the t ratios beneath each coefficient. Ratios of 2.0 or larger are statistically significant at the 0.05 level. Larger t ratios signal higher levels of significance.

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1949. Twenty of the 100 had UC programmes in 2004. Within this set of 100, income (per-capita GDP) continues to enter positively and with a coefficient that is similar in size to the income coefficients of the previous equations. Also note that the dummy variable for East and South Asia remains insignificant while the dummies for South America and for Central America and the Caribbean enter equation (6) much like equation (4). On average, one in five of these countries adopted UC between 1949 and 2004 but with significant contrasts among countries from the two regions of the western hemisphere. Overall, equations (3)-(6) indicate that per-capita GDP has been very influential across countries in the decision to adopt UC, both including and excluding the CEE-FSU countries. The coefficients on income are quite similar in all four equations.

The regressions of Table 2 were used to predict the presence of UC in individual countries in 2004. For each data point (country) the regressions make a projection of the probability of UC. Projections above 0.5 identify countries predicted to have UC while projections below 0.5 predict that the country would not have UC. Since equation (1) just has income as an explanatory variable, its projections show the accuracy of making projections solely on the basis of knowing each country's income. The equation makes 109 correct identifications and 41 errors. Using just income, 73 per cent of the projections correctly identified whether or not individual countries had UC in 2004.

The errors from the equation (1) projections were highly concentrated by region. There were no errors for OECD-20, Sub-Saharan Africa and for Central America and the Caribbean. However errors were made for the majority of countries from three other regions: 8 of the 12 CEE countries, 14 of the 16 FSU countries and 11 or 17 North Africa and Middle East countries. These three regions accounted for 33 of the 41 errors.

Adding the regional dummy variables significantly improved the accuracy of the projections. Equation (2) correctly predicted UC status in 2004 for 130 of the 150 countries or 87 per cent. Just knowing two factors, income and regional location, was sufficient to identify the UC status of the vast majority of countries in 2004.[11]

The patterns of errors for individual countries merit a few comments. For the CEE and FSU regions the only errors from equation (2) were for Kazakhstan and Tajikistan, the two of these 28 without UC in 2004. Two errors were present in Sub-Saharan Africa, for Mauritius and South Africa, the only two countries with UC in 2004.

The error patterns for countries in the other regions had mixed signs. In Asia, three low income countries with UC (Bangladesh, China and Thailand) were predicted not to have UC

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[11] The counts of errors from equations (4) and (6) were very similar, 19 and 17 respectively.

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while Singapore was predicted to have UC when it does not. In North Africa and the Middle East, errors were made for eight countries, the highest error rate across all regions. Six countries with UC programmes had projected probabilities below 0.5 (Algeria, Egypt, the Islamic Republic of Iran, Iraq, Tunisia and Turkey). Conversely, two with probabilities above 0.5 (Kuwait and the United Arab Emirates) did not have UC in 2004. The four errors in South America were the predicted presence of UC in Colombia, Paraguay and Peru and its absence in Ecuador. In these four instances, the predicted probabilities were all between 0.40 and 0.60, so that the errors could be termed close calls. In the other 16 cases the deviations were larger, and for 14 the deviation of the projection from the actual exceeded 0.70. The 14 countries with "large" errors merit some added comments.

The five countries with large errors that did not have UC in 2004 were Kazakhstan, Tajikistan, Kuwait, the United Arab Emirates (UAE) and Singapore. Note that all five are located in Asia and all have substantial Moslem populations. Recall that the former two are the only CEE-FSU countries without UC. The latter three all had incomes in 1999 at least two and one half times the worldwide average. On the basis of their high incomes, they were projected to have UC.

The nine large errors for countries with UC in 2004 are universally found among countries with low or moderate income levels. The highest income (per-capita GDP) among this group was Turkey's USD6,440 or 94 per cent of the worldwide mean and 64 per cent above the worldwide median. In considering these countries, it is useful to recall that the data source, *Social Security Programs Throughout the World*, identifies countries that have enacted UC legislation but provides no information related to actual benefit payments. From other sources, it is known that the programmes in five countries: Algeria, China, Thailand, Tunisia, and Turkey, are paying benefits.[12] The status of the programmes in Bangladesh, Egypt, the Islamic Republic of Iran and Iraq on the question of actually paying benefits was not known to this author as of June 2004. Similar questions could be raised for some other countries identified in SSPTW as having UC in 2004, e.g., Ecuador and Venezuela.

Countries from the North Africa and Middle East are unusual in that the high-income countries are less likely to have UC in 2004 than the region's middle-income countries. All but one (Israel) of these 17 countries is Moslem. The five Moslem countries from the region with the highest income in 1999 are Kuwait, the United Arab Emirates, Saudi Arabia, Oman and the Libyan Arab Jamahiriya. All have income substantially above the worldwide average and all produce oil (two factors that presumably are related), but not one of the five has UC. At least three middle income countries from this region (Algeria, Tunisia and Turkey) do

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[12] Thailand commences payments in mid-year 2004.

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have UC in 2004.[13] Unlike other regions, the association between income and having UC in this region is, if anything, negative.[14] The explanation for this situation would be interesting to pursue. Perhaps the presence of guest workers in oil-producing countries is so widespread that the labour market adjusts differently in recessions when compared to other countries, e.g., guest worker unemployment increases but the increase does not place pressure on the political system.

To pursue the question of why some countries do or do not adopt UC, one starting point would be to examine the 14 countries with the large errors identified in the preceding three paragraphs. However, a careful analysis at the level of individual countries lies beyond the scope of this paper.[15]

The preceding analysis has shown that having UC is linked both to a country's income and its geographic area. Compared to others, countries with high income and countries located in the CEE and FSU regions are most likely to have UC programmes. Several other factors probably enter decisions of individual countries to adopt or not adopt UC. For example, Portugal adopted UC in the mid 1970s following a major change in its political system while the Republic of Korea adopted UC at about the same time it became a member country of the OECD. The widespread adoption of UC by CEE-FSU countries between 1989 and 1994 is certainly related to their previous history and beliefs about the importance of having social protection programmes. The significance of the CEE-FSU dummy variables probably reflects cultural-political similarities across these countries. In sum, more work on why individual countries do or do not have UC programmes could yield additional interesting and important findings.

3. The costs of unemployment compensation

This section explores a second important aspect of UC, its costs. Establishing a UC programme can potentially enhance the income security of labour market participants. To be effective in stabilizing the income of individuals and families with unemployment, however, a country's UC programme must reach a substantial share of the unemployed and it must pay

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[13] Egypt, the Islamic Republic of Iran and Iraq are also listed as having UC in 2004.

[14] When the 0-1 dummy for presence of UC in 2004 was regressed on per-capita GDP, it yielded a negative coefficient when fitted for the 16 Moslem countries from this region. However, the coefficient was not statistically significant (a t ratio of 1.4). Similar regressions for the countries in two other regions (East and South Asia and South America) yielded positive income coefficients. Even though the number of countries from these regions was limited (22 and 10 respectively) the income coefficients were statistical significant (with t ratios of 2.9 and 1.9 respectively).

[15] Two papers that examine the question of adopting UC are: Vodopivec, M. and Raju, D. 2002. "Income Support Systems for the Unemployed: Issues and Options", The World Bank, Washington D.C.; and Simonetta, J. and Wandner, S. 2001. "Initiating and Expanding Unemployment Compensation Programs Around the World", working paper, U.S. Department of Labour, November.

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minimally adequate benefits. These payouts entail costs that must be financed by payroll taxes or other means.

UC costs vary across countries due to differing unemployment rates and to other factors related UC statutory provisions and administrative practices. Unlike information on the prevalence of UC examined in parts I and II, securing information on UC costs poses a serious challenge. There is no publication like *Social Security Programs Throughout the World* that provides readily available UC cost data. Much of the needed data must be gathered from the social insurance publications of individual countries.[16]

The present analysis of costs expresses costs as a fraction of wages and salaries and examines average costs for groups of countries during the 1990s. The cost rates derived in this analysis show the fraction (per cent) of wages and salaries that UC payroll taxes must equal in order to support the payouts of a country's UC programme.

Three factors that determine a country's UC costs are:

- the unemployment rate;
- access to the programme as reflected by the recipiency rate (the ratio of UC beneficiaries to total unemployment);
- the generosity of benefits as indicated by the replacement rate (the ratio of average payments (weekly or monthly) to average earnings among covered workers).[17]

All three factors vary widely from one country to the next, yielding highly variable UC cost rates.

Of the three factors, the first (the unemployment rate) is determined by economic forces that are largely beyond the control of a country, especially in the short run. The other two, the recipiency rate and the replacement rate, are strongly influenced by UC statutes and administrative practices, factors that a country can control. Combining the recipiency rate and the replacement rate yields a summary measure of UC generosity. Generosity has many determinants, but generosity strongly reflects the intent of a country in providing UC benefits to the unemployed. High recipiency rates and high replacement rates both contribute to high UC generosity. The product of these two factors shows roughly what fraction of the loss of

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[16] The OECD publishes UC cost data for member countries but not data on the number of UC beneficiaries.
[17] The derivation and analysis of this cost framework are given in Chapter 2 of Vroman, W. and Brusentsev, V. 2004. *Unemployment Compensation: A Comparative Analysis*, W.E. Upjohn Institute, Kalamazoo, MI, forthcoming.

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earnings caused by unemployment is paid to the recipients of UC. Higher fractions mean UC is replacing more of the loss in earnings.[18]

Table 3 provides a summary of UC costs during the 1990s for a group of 32 countries, nearly half of the 68 countries with UC examined previously. The individual countries were selected on a nonrandom basis with data availability being a major factor. Previous work by the author in certain countries also led to their inclusion. Eighteen countries are from the OECD-20 group[19] while four are from each of three regions: CEE-FSU, East and South Asia and South America. Mauritius and Turkey are also included.

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[18] The generosity index is an approximation. A more complete accounting for the loss of earnings that is replaced by UC benefits would have to incorporate at least three other components: the ratio of the average earnings of the unemployed to overall average earnings in the economy, the loss of earnings associated with involuntary part-time employment and the earnings loss due to reduced weekly hours among full-time workers. The generosity index also does not attempt to measure UC eligibility.

[19] Only Greece and Italy are absent. The identity of the 18 is shown at the bottom of Table 3.

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Table 3. *Average costs of UC for 32 programmes during the 1990s*

Countries	Number of countries (1)	Unemployment rate, % (2)	Recipiency Rate, % (3)	Remplacement rate, % (4)	UC Generosity (3)*(4) (5)	UC cost rate, % of payroll (2)*(3)*(4) (6)
Panel A. Summary for 32 countries						
Simple average	32	8.27	0.61	0.36	0.25	2.03
Variance		16.30	0.19	0.03	0.05	3.37
Standard deviation		4.04	0.44	0.16	0.22	1.83
Coefficient of variation (CV)		0.49	0.72	0.46	0.87	0.90
Panel B. Simple averages by region (a)						
OECD-20	18	8.49	0.91	0.44	0.40	3.20
Central Eastern Europe - FSU	4	12.09	0.49	0.19	0.10	1.33
South-East Asia	4	2.71	0.14	0.34	0.05	0.18
South America	4	8.89	0.14	0.27	0.05	0.34
All others	2	8.59	0.01	0.15	0.00	0.02
Panel C. Simple averages by type of UC programme						
UA (assistance)	4	6.46	0.55	0.24	0.17	1.35
All UI (insurance)	28	8.53	0.62	0.37	0.26	2.13
UI-UA combined	10	9.39	0.96	0.45	0.43	3.61
UI alone	18	8.06	0.43	0.33	0.17	1.31

Source: Simple averages of data assembled by the author from detailed country reports.
Notes: Recipiency is the ratio of UC beneficiaries to unemployment.
The replacement rate is the ratio of average benefits (weekly or monthly) to the average earnings of covered workers
(a) The 18 OECD countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.
The four CEE-FSU countries are Bulgaria, Estonia, Slovakia and Ukraine.
The four Asian countries are Hong Kong, Japan, Republic of Korea and Taiwan.
The four South American countries are Argentina, Brazil, Chile and Uruguay.
Other two countries are Mauritius and Turkey.
Data generally refer to the ten years from 1990 to 1999, Important exceptions are Bulgaria (1996-2000), Slovakia (1995-2000), Estonia (1994-1999), Ukraine 1995-2000), Republic of Korea (1997-2001), Taiwan (1999-2001), Argentina (1992-1997), Mauritius (1995-2002) and Turkey (2002-2003).

Panel A of Table 3 provides overall averages for the indicators of UC costs and of cost variability across the 32 countries. All averages in the table are simple averages. Thus Estonia, Mauritius, Ireland and New Zealand have as much weight in the averages as Japan and the United States. Besides simple averages for the 32 countries, Panel A also displays variances, standard deviations and coefficients of variation for every measure in columns (2) through (6).

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The coefficient of variation (CV) is a measure of relative variability. Its numerator is the standard deviation (the average absolute distance of a country measure from the average for the 32 countries) while its denominator is the overall 32-country average. A higher value for a CV indicates wider variability about the average from one country to the next, or higher relative variability. The lowest of the CVs in Table 3 is for the replacement rate with a CV of 0.46, followed closely by the unemployment rate with a CV of 0.49. Of the three factors that contribute to the UC cost rate, the recipiency rate (column (3)) has the widest relative variability. Unemployment rates and replacement rates are more similar across countries than are recipiency rates. The widest relative variability of all measures in Panel A is exhibited by the CVs for the UC generosity indicator in column (5) and the UC cost rate in column (6). UC generosity and the UC cost rate vary widely from one country to the next.

Panel B shows clearly that countries in the individual regions present major contrasts in the factors that contribute to variation in UC costs. The high unemployment rate average for the four CEE-FSU countries stands in sharp contrast to the low average for the four Asian countries. Average recipiency rates are by far the highest in the OECD-20 countries (0.91) while averages for three groups fall below 0.15. The average replacement rate is also highest in the OECD-20 group (0.44). As a result of both recipiency factors (columns (3) and (4)), note the progression of average generosity indices in column (5) from 0.40 for the OECD-20 group to 0.05 or less in three regions.

Combining all three cost-related factors, the average cost rates in column (6) also demonstrate major contrasts. The average for the OECD-20 countries is more than three per cent of payroll while the average cost rate falls below 0.5 per cent of payroll for three regional groupings. Countries in the OECD-20 group can be described as having average unemployment rates but high generosity with the latter reflecting both a high average recipiency rate and a high average replacement rate.[20] Low UC generosity in the other regions makes a strong contribution to their low UC cost rates.

Panel C displays a cost summary where countries are arranged according to the type of UC programme. Four countries (Australia, Hong Kong, Mauritius and New Zealand) provide unemployment assistance (UA) to unemployed workers. Here an income test is one element in eligibility determinations. On average, the countries with UA have recipiency somewhat below the all-country average (0.55 relative to 0.61), but their average replacement rate is only about two thirds of the overall average (0.24 relative to 0.36). Note that the average cost in UA countries (1.25 per cent of payroll) is considerably lower than the all-country average (2.03 per cent).

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[20] Regression analysis of the UC cost factors summarized in Table 3 shows recipiency rates and replacement rates to be significantly higher in the OECD-20 countries compared to the other 14 countries. For all the cost-related measures there is also an association between income (per-capita GDP) and costs.

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The other 28 countries offer unemployment insurance (UI) where benefits are earnings-related in nearly all instances.[21] In 18 countries, UI is offered as a stand-alone programme while in 10 the country provides both UI and UA to the unemployed.[22] Panel C shows averages for all 28 and for the two sub-groups. The countries that offer both UI and UA were characterized by a high recipiency rate (0.96) and a high replacement rate (0.45) as well as above-average unemployment rates during the 1990s. As a result, UC costs averaged 3.61 per cent of payroll during the 1990s or nearly double the all-country average. Panel C shows that UC costs are related to the type of programme offered to the unemployed. While the contrasts in the averages for three types (UA, UI-UA and UI alone) are vivid, wide variability is also present within each of the three types (although this is not directly demonstrated in Table 3).

To summarize the preceding discussion of costs, four comments are appropriate.

- The costs of UC programmes were highly varied during the 1990s across a sample of 32 countries.
- Three factors contribute to this cost variability: the unemployment rate, the recipiency rate and the replacement rate. Of the three factors, the recipiency rate is the most varied from one country to the next and across regions.
- UC costs were highest in the OECD-20 countries, a reflection of their high benefit generosity, especially their high average recipiency rate.
- High costs were most pronounced in countries with combined UI-UA programmes. For the ten countries with such combined programmes, costs during the 1990s were nearly twice the overall average among this group of 32 countries.

Like the earlier analysis of parts I and II, the present analysis of UC costs has been limited. It focused on cost indicators for groups of countries not individual countries. It did not explore the determinants of recipiency such as sectoral coverage, minimum work history requirements or maximum potential benefit duration. It also did not explore effects of the statutory replacement rate, the maximum benefit, dependents' benefits or other factors that influence the size of average payments to recipients. The intent was to summarize data for a group of countries and show that UC costs are highly variable from one country to the next.

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[21] Exceptions are provided by the UI programmes in Ireland and the United Kingdom where flat benefits are provided. Estonia had flat benefits until 2003 when it switched to earnings-related benefits.

[22] The ten countries with UI-UA programmes are all from the OECD-20 group. Following a job separation they provide UI first to most applicants. UA is available if UI eligibility is not satisfied and/or after the entitlement to UI has been used up.

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